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Patent Application of  
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for

## TITLE: SELF SEALING LETTER SHEETS

### CROSS REFERENCE TO RELATED APPLICATIONS

This is a division of Ser. No. 09/130,534 filed August 04, 1998, now U.S. Patent 6,406,586, which is a continuation-in-part of Ser. No. 09/093,301 filed June 08, 1998, now abandoned, which is a continuation-in-part of Ser. No. 08/986,394, filed Dec. 08, 1997, now abandoned.

### BACKGROUND-FIELD OF THE INVENTION

This invention relates to letter sheets particularly to such letter sheets that can be self sealed, obviating thereby the need for an envelope. The term "letter" in this application relates to a blank of a sheet material susceptible of bearing text and/or graphics whether manually, mechanically or otherwise created. Accordingly, the term "self sealing letter" relates to a letter sheet so defined, and which additionally does not require an envelope to cover it to provide privacy, as the letter sheet of the present invention can readily cover itself. For the purpose of this disclosure, the word "letter" in the term "letter sheet" does not have a size restricting connotation; i.e., it should not be construed to indicate a "letter size" sheet, but instead it applies to any dimensions which enable the embodiment of the disclosed invention.

### BACKGROUND-DESCRIPTION OF PRIOR ART

Whether it is one individual piece or a massive list of pieces, personalization is a ruling constant in any mailing project in today's private and public sectors. Hence, functionality, economy and versatility are very desirable qualities associated with these projects.

Many attempts have been made to achieve these qualities, aimed at designing mailing

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products that do not require an envelope, or that produce the message and a cover for it in one single step, and most of these efforts have been restricted to continuous feeding systems (e.g. web presses and friction printers) as opposed to non-continuous or sheet fed printers (e.g. laser, inkjet, thermal and litho printers.)

The following are notable exponents of the known art:

U.S. Patent **4,586,651** to Bradley, assigned to Bedford Engineering Co. of Armonk, NY; U.S. Patent **5,125,562** to Bendel; U.S. Patent **5,398,867** to Murphy; U.S. Patent **5,553,774** to Goodno, assigned to Moore Business Forms, Inc. of Grand Island, NY; and U.S. Patent **5,640,835** to Muscoplat.

These are specific shortcomings of these exponents of the known art:

- 1) No product addresses both, continuous and non continuous feeding printing needs,
- 2) Some of these products require the forming of enclosure and envelope separately, utilizing thereby additional materials and assembly time, also increasing the postage cost due to its higher weight,
- 3) Some of these products require double sided printing of the piece, increasing the costs and also increasing the risk of mismatch due to human error,
- 4) Some of these products require a complex industrial set-up, limiting thereby the options of the end user, and preventing the on-location final output by the end user,
- 5) Some of these products use unprotected and exposed coatings of adhesive, during the preparation, printing and forming of the piece, compromising thereby the effectiveness of the adhesive, the appearance of the finished piece, the privacy of the message, and the good flow of the overall project,
- 6) Some of these products require adhesive coatings to be moistened to promote adhesion, and some require the production, mounting and then the peeling of a liner to expose the adhesive, incurring thereby in additional steps and costs.

Also, related to these self contained letter sheets, the USPS (United States Postal Service) sells some non-continuous pieces that don't require an envelope for mailing.

One version is sold under the name "Aerogramme", which appears to be intended mainly for letters and similar correspondence.

Another version is sold under the name "Bright Eyes Stamps", (**product # 9840020**) made

of a card stock and, with decorative imprinting on it, which appears to be intended for greetings and similar correspondence.

Both products require layers of dry adhesive to be moistened for sealing of the piece which constitutes its first disadvantage.

Another significant disadvantage resulting from this system is the inability to feed the piece through any sheet fed printer and especially a desktop printer for personalized imprinting.

And yet another disadvantage is the need to enter the addressing information on the outside of the piece, as an additional step.

There is also a self seal mailer in the marketplace by Avery Dennison Corp. of Pasadena, CA, (**Product # 8325**) bearing a patent pending notice, which is an 8 ½ x 11" rectangular sheet with two score lines, dividing the rectangle in three panels, and having a narrow extension of about 5/8" (For a total length of 11 5/8") that carries a layer of pressure sensitive adhesive and which needs to be protected by a removable strip carrying a release substance.

This self seal mailer has the following disadvantages:

- 1) It is necessary to separately produce and then affix this strip liner, which represents additional manufacturing costs that obviously translate into a higher retail price.
- 2) It is necessary to remove and then discard this strip liner to seal the mailer.
- 3) It is necessary to install and use customizing software prior to printing of the form via a computer, due to the extension that causes the form to have a non standard size, as those pre-formatted by most word processing, desktop publishing, accounting and other computer programs.
- 4) The additional costs associated with this software.
- 5) The need to print separately the message and the addressing information.
- 6) Due to its open side panels, the contents of the message can be easily seen by anyone with just a minimal effort. Hence, the mailer can not be used when privacy and confidentiality are desirable.
- 7) This product is only suitable for non-continuous printers.

Also, at a very massive level, there are some mailing products that provide a message and means to reply, for the recipient to fill-out an enclosed form, in certain cases or a detachable portion in other cases. They appear more expensive and complicated than the "two-way"

self sealing letter sheets of the present invention.

One of the most common systems of the prior art requires the use of multiple layers of paper treated with carbon on its back, which suggests a high cost of production, and in the second aspect (the reply piece), the recipient must either peel off and discard a release bearing strip or moisten a dry adhesive coating.

## **SUMMARY OF THE INVENTION**

In accordance with the present invention, a self sealing letter sheet that is suitable for feeding into any type of printer is obtained from a flat, flexible material and comprises a body, one or more flaps, one or more layers of an adhesive substance and one or more layers of a release substance, that are arranged so when the flap(s) are bent towards the body, the adhesive substance layer(s) face the release substance layer(s), preventing a permanent connection, and which defines the final product, i.e. the way it is offered to the public.

Subsequently, the user can seal the letter by positioning another section of the sheet material between the adhesive and release substance layer(s).

The following are objects and advantages of this invention:

- a)** to provide a letter sheet that can wrap itself;
- b)** to provide a letter sheet that can as a result obviate the need of an envelope;
- c)** to provide a letter sheet that can as a result obviate the need to insert a message bearing piece into an envelope;
- d)** to provide a system that permits the practical and economical production of self contained letter sheets such as missives, business and legal forms, accounting and legal correspondence, advertising messages, etc. for the personalized printing of both, a private message and the address and return information as well as any other information, with one single printing command, and one single trip of said letter sheet across the printer;
- e)** to provide a letter sheet that as a result can save paper, thanks to its letter plus envelope dual function;
- f)** to provide a letter sheet that can be customized to suit continuous and non continuous feeding systems, making possible its use with virtually any industrial, commercial and personal printers, and the handling of long runs, short runs or individual printing assignments;
- g)** to provide a letter sheet that can increase the efficiency of personalized printing by including additional areas that can become separate personalized documents as cards, stubs, etc., after they are detached, which in combination with an enclosure, as a return envelope, for example, can maximize the results of a personalized mailing project;
- h)** to provide a letter sheet which can further provide nesting capabilities that enable the

insertion of enclosures;

i) to provide a letter sheet that can satisfy a diversity of personalized mailing specifications, by working in conjunction with software customized to said specifications, creating additionally other marketing opportunities;

j) to provide a letter sheet which can be readily sealed, and which does not require moistening of dry adhesive layers;

k) to provide a letter sheet which can be readily sealed, and which does not require the production, affixing and subsequent removal of a release liner to protect adhesive coatings;

l) to provide a letter sheet which can be readily sealed, and which does not require the use of adhesive tapes, staples or any other fastening means;

m) to provide a letter sheet that can offer absolute privacy and confidentiality, by requiring the absolute and deliberate opening of it to expose its message;

n) to provide a letter sheet that offers flexibility for full compliance with private and public mailing/courier system requirements;

o) to provide a self sealing letter sheet which can further include attached thereto another self sealing letter sheet that may serve as a reply piece;

p) to provide a self sealing letter sheet that can discretionarily be processed by hand.

## **REFERENCE NUMERALS**

**202** fastener layer

**204** optional and alternative lower strength fastener layer

**206** fastener inhibitor layer

## BRIEF DESCRIPTION OF THE DRAWINGS

**FIG. 1:** is a plan view of layers of adhesive, lower strength adhesive and adhesive inhibitor, as respective examples of a fastener, a lower strength fastener and a fastener inhibitor.

**FIG. 2A:** is a perspective view of a pattern arrangement of layers on two opposite planes.

**FIG. 2B:** is a perspective view of the pattern arrangement of **FIG. 2A** now having another plane between them.

**FIG. 3A:** is a perspective view of a pattern arrangement of layers on two opposite planes.

**FIG. 3B:** is a perspective view of the pattern arrangement of **FIG. 3A** now having another plane between them.

**FIG. 4A:** is a perspective view of a pattern arrangement of layers on two opposite planes.

**FIG. 4B:** is a perspective view of the pattern arrangement of **FIG. 4A** now having another plane between them.

**FIG. 5A:** is a perspective view of a pattern arrangement of layers on two opposite planes.

**FIG. 5B:** is a perspective view of the pattern arrangement of **FIG. 5A** now having another plane between them.

**FIG. 6A:** is a perspective view of a pattern arrangement of layers on two opposite planes.

**FIG. 6B:** is a perspective view of the pattern arrangement of **FIG. 6A** now having another plane between them.

**FIG. 7A:** is a plan view of a self sealing letter sheet, illustrating the layers used.

**FIG. 7B:** is a plan view of the letter sheet of **FIG. 7A**, having the flaps bent.

**FIG. 7C:** is a plan view of the letter sheet of **FIG. 7B**, after printing occurred.

**FIG. 7D:** is a plan view of the letter sheet of **FIG. 7C**, having the flaps unbent.

**FIG. 7E:** is a perspective view of the letter sheet of **FIG. 7D**, being fanfolded.

**FIG. 7F:** is a plan view of the letter sheet of **FIG. 7E**, fully folded and sealed.

**FIG. 8:** is a plan view of a self sealing letter sheet, having pre-printed indicia.

**FIG. 9A:** is a plan view of a self sealing letter sheet, illustrating the layers used.

**FIG. 9B:** is a plan view of the letter sheet of **FIG. 9A**, having the flaps bent.

**FIG. 9C:** is a plan view of the letter sheet of **FIG. 9B**, after printing occurred.

**FIG. 9D:** is a plan view of the letter sheet of **FIG. 9C**, having the flaps unbent.

**FIG. 9E:** is a perspective view of the letter sheet of **FIG. 9D**, being fanfolded.

**FIG. 9F:** is a plan view of the letter sheet of **FIG. 9E**, fully folded and sealed.

**FIG. 10A:** is a plan view of a letter sheet, illustrating the layers used.

**FIG. 10B:** is a plan view of the letter sheet of **FIG. 10A**, having the flaps bent.

**FIG. 10C:** is a plan view of the letter sheet of **FIG. 10B**, after printing occurred.

**FIG. 10D:** is a plan view of the letter sheet of **FIG. 10C**, having the flaps unbent.

**FIG. 10E:** is a perspective view of the letter sheet of **FIG. 10D**, being folded.

**FIG. 10F:** is a plan view of the letter sheet of **FIG. 10E**, fully folded and sealed.

**FIG. 11:** is a plan view of a self sealing letter sheet after printing occurred, and having the flaps unbent.

**FIG. 12A:** is a plan view of a self sealing letter sheet illustrating the layers used.

**FIG. 12B:** is a plan view of the letter sheet of **FIG. 12A**, having the flaps bent.

**FIG. 12C:** is a plan view of the letter sheet of **FIG. 12B**, after printing occurred.

**FIG. 12D:** is a plan view of the letter sheet of **FIG. 12C**, having the flaps unbent.

**FIG. 12E:** is a perspective view of the letter sheet of **FIG. 12D**, being fanfolded.

**FIG. 12F:** is a plan view of the letter sheet of **FIG. 12E**, fully folded and sealed.

**FIG. 13:** is a plan view of a self sealing letter sheet, after printing occurred, having the flaps unbent.

**FIG. 14A:** is a plan view of a self sealing letter sheet, illustrating the layers used.

**FIG. 14B:** is a plan view of the letter sheet of **FIG. 14A**, having the flaps bent.

**FIG. 14C:** is a perspective view of the letter sheet of **FIG. 14B**, after printing occurred, being fanfolded.

**FIG. 14D:** is a plan frontal view of the letter sheet of **FIG. 14C**, fully folded and sealed.



**FIG. 14E:** is a plan rear view of the letter sheet of **FIG. 14D**.

**FIG. 15A:** is a partial plan view of a web of self sealing letter sheets, illustrating the layers used.

**FIG. 15B:** is a perspective view of the web of **FIG. 15A**, illustrating a sequence of letter sheets in assembled and folded condition.

**FIG. 16:** is a partial plan view of a web of self sealing letter sheets, having preprinted indicia.

**FIG. 17A:** is a plan view of a self sealing letter sheet, illustrating the layers used.

**FIG. 17B:** is a plan view of the letter sheet of **FIG. 17A**, having the flaps bent and after printing occurred.

**FIG. 17C:** is a perspective view of the letter sheet of **FIG. 17B**, being folded.

**FIG. 17D:** is a perspective view of the letter sheet of **FIG. 17C**, in a later stage of its folding.

**FIG. 17E:** is a plan rear view of the letter sheet of **FIG. 17D**.

**FIG. 17E:** is a plan front view of the letter sheet of **FIG. 17E**.

**FIG. 18:** is a partial plan view of a web of self sealing letter sheets, illustrating the layers used.

**FIG. 19A:** is a plan view of a self sealing letter sheet, illustrating the layers used.

**FIG. 19B:** is a plan view of the letter sheet of **FIG. 19A**, having the flap bent, and after printing occurred.

**FIG. 19C:** is a perspective rear view of the letter sheet of **FIG. 19C**, being folded.

**FIG. 19D:** is a front plan view of the letter sheet of **FIG. 19C** fully folded and sealed.

**FIG. 20A:** is a plan partial view of a web of letter sheets, illustrating the layers used.

**FIG. 20B:** is a plan partial view of the web of letter sheets of **FIG. 20A**, having its flap bent, and after printing occurred.

**FIG. 20C:** is a plan view of a letter sheets detached from the web of **FIG. 20B**.

**FIG. 20D:** is a perspective view of the letter sheet of **FIG. 20C**, being folded.

**FIG. 20E:** is a plan view of the letter sheet of **FIG. 20D** folded and sealed.

**FIG. 21:** is a plan partial view of a web of letter sheets, further illustrating traction holes.

**FIG. 22A:** is a plan view of a self sealing letter sheet, illustrating the layers used.

**FIG. 22B:** is a plan view of the letter sheet of **FIG. 22A**, having its flap bent, and after printing has occurred.

**FIG. 22C:** is a perspective view of the letter sheet of **FIG. 22B**, being folded.

**FIG. 22D:** is a plan view of the letter sheet of **FIG. 22C**, folded and sealed.

**FIG. 23A:** is a plan view of a self sealing letter sheet, illustrating the layers used.

**FIG. 23B:** is a plan view of the letter sheet of **FIG. 23A**, having its flap bent, and after printing has occurred.

**FIG. 23C:** is a perspective view of the letter sheet of **FIG. 23B**, being folded.

**FIG. 23D:** is a plan view of the letter sheet of **FIG. 23C**, folded and sealed.

**FIG. 24A:** is a plan view of a dual self sealing letter sheet, containing a response self sealing letter sheet section, and illustrating the layers used.

**FIG. 24B:** is a plan view of the dual letter sheet of **FIG. 24A**, having the flaps bent, and after printing has occurred.

**FIG. 24C:** is a plan view of the dual letter sheet of **FIG. 24B**, having its flaps unbent.

**FIG. 24D:** is a perspective view of the dual letter sheet of **FIG. 24C**, being fanfolded.

**FIG. 24E:** is a plan view of the dual letter sheet of **FIG. 24D** fully folded and sealed.

**FIG. 24F:** is a perspective view of the first step of opening the dual letter sheet of **FIG. 24E**.

**FIG. 24G:** is a perspective view of the second step of opening the dual letter sheet of **FIG. 24F**.

**FIG. 24H:** is a plan view of the dual letter sheet of **FIG. 24G**, opened and unfolded.

**FIG. 24I:** is a perspective view of the dual letter sheet of **FIG. 24H**, illustrating the detachment of the reply section.

**FIG. 24J:** is a plan view of the reply section of **FIG. 24I**.

**FIG. 24K:** is a plan view of the reply section of **FIG. 24J**, having the flaps unbent.

**FIG. 24L:** is a perspective view of the reply section of **FIG. 24K**, being folded.

**FIG. 24M:** is a plan front view of the reply section of **FIG. 24L**, fully folded and sealed.

**FIG. 24N:** is a plan rear view of the reply section of **FIG. 24M**, fully folded and sealed.

**FIG. 25A:** is a plan view of a dual self sealing letter sheet containing a response self sealing letter sheet section, and illustrating the layers used.

**FIG. 25B:** is a plan view of the dual letter sheet of **FIG. 25A**, having the flaps bent.

**FIG. 25C:** is a plan view of the dual letter sheet of **FIG. 25B**, after printing has occurred.

**FIG. 25D:** is a plan view of the dual letter sheet of **FIG. 25C**, having its flaps unbent.

**FIG. 25E:** is a perspective view of the dual letter sheet of **FIG. 25D**, being fanfolded.

**FIG. 25F:** is a perspective view of the dual letter sheet of **FIG. 25E**, in a later stage of fanfolding.

**FIG. 25G:** is a plan view of the dual letter sheet of **FIG. 25D** fully folded and sealed.

**FIG. 25H:** is a plan view of the dual letter sheet of **FIG. 25G**, opened and unfolded.

**FIG. 25I:** is a perspective view of the dual letter sheet of **FIG. 25H**, illustrating the first step to produce the reply section.

**FIG. 25J:** is a perspective view of the dual letter sheet of **FIG. 25I**, illustrating the second step to produce the reply section.

**FIG. 25K:** is a plan view of the reply section of **FIG. 25J**.

**FIG. 25L:** is a plan view of the reply section of **FIG. 25K**, having the flaps unbent.

**FIG. 25M:** is a perspective view of the reply section of **FIG. 25L**, being folded.

**FIG. 25N:** is a plan front view of the reply section of **FIG. 25M**, fully folded and sealed.

**FIG. 25O:** is a plan rear view of the reply section of **FIG. 25N**, fully folded and sealed.

## DETAILED DESCRIPTION OF THE DRAWINGS

**FIGS. 1 through 6B** are submitted in abstract form since they apply to all embodiments and combination of embodiments of this invention. These figures illustrate the different layers and different pattern arrangements of the layers that can be implemented to achieve the different fastening effects that enable the production of the multiple embodiments of this invention.

It is to be clearly understood that these pattern arrangements merely represent some examples. Different needs may require different patterns, and accordingly, a specific pattern or combinations of patterns will result obvious within the scope of this invention.

As stated before, it is an express and explicit aspect of this application that all the pattern arrangements of **FIGS. 2A through 6B** and any combination thereof apply to all embodiments of this application, and this is the purpose of their discussion in this specification.

**REFERRING TO FIG. 1:** It shows in plan view a fastener layer **202**, which as an example could be a pressure sensitive adhesive; a lower strength fastener layer **204**, which as an example could be a low tack pressure sensitive adhesive; and a fastener inhibitor layer **206**, which as an example could be a release substance.

Properties of fastener layers **202** and fastener inhibitor layers **206** may vary to suit different purposes, including the purpose of removably connecting a fastener layer **202** to a fastener inhibitor layer **206**.

**REFERRING TO FIG 2A:** It shows in perspective view a singular fastener layer **202** on plane **201**, facing a singular fastener inhibitor layer **206** on plane **203**. In this and subsequent references, planes **201** and **203** represent each a face or surface.

**REFERRING TO FIG 2B:** It shows in perspective view the layers of **FIG. 2A**, now having a two sided plane **205** free of any layers positioned between planes **201** and **203**, that will connect to fastener layer **202** when in contact with it. In this and all subsequent references, each side of plane **205** represents a face or surface.

In these **FIGS. 2A and 2B** as well as in all subsequent references, planes **201**, **203** and **205** can respectively correspond to 3 different plies of a folded piece of a sheet material.

**REFERRING TO FIG. 3A:** It shows in perspective view a fastener layer **202** alternated with a fastener inhibitor layer **206** on plane **201**, facing another fastener layer **202** alternated with a fastener inhibitor layer **206** on plane **203**, arranged so the fastener layer of one plane face the fastener inhibitor layer of the other plane and vice versa.

**REFERRING TO FIG 3B:** It shows in perspective view the layers of **FIG. 3A**, now having a two sided plane **205** free of any layers between planes **201** and **203**, that will connect to fastener layers **202** when in contact with them.

**REFERRING TO FIG. 4A:** It shows in perspective view a sequence of fastener layers **202** alternated with fastener inhibitor layers **206** on plane **201**, facing another sequence of fastener layers **202** alternated with fastener inhibitor layers **206** on plane **203**, arranged so the fastener layers of one plane face the fastener inhibitor layers of the other plane and vice versa.

**REFERRING TO FIG 4B:** It shows in perspective view the layers of **FIG. 3A**, now having a two sided plane **205** free of any layers positioned between planes **201** and **203**, that will connect to fastener layers **202** when in contact with them.

**REFERRING TO FIG. 5A:** It shows in perspective view a sequence of fastener layers **202**, alternated with fastener inhibitor layers **206**, lower strength fastener layers **204**, and a blank space (area with no layer) on plane **201** facing another sequence of fastener layers **202**, alternated with fastener inhibitor layers **206**, lower strength fastener layers **204** and blank spaces (areas with no layers) on plane **203**, arranged so the fastener layers of one plane face the fastener inhibitor layers of the other and vice versa and the lower strength fastener layers of one plane face the blank space(s) of the other and vice versa. A temporary fastening is allowed by the contact of the lower strength fastener layers **204** with the blank spaces.

**REFERRING TO FIG 5B:** It shows in perspective view the layers of **FIG. 5A**, now having a two sided plane **205** free of any layers positioned between planes **201** and **203**, that will connect to fastener layers **202** when in contact with them.

**REFERRING TO FIG. 6A:** It shows in perspective view a lower strength fastener layer **204** on plane **201**; facing plane **203**, with no layer.

**REFERRING TO FIG 6B:** It shows in perspective view the lower strength fastener layer **204** on plane **201** and no layer on plane **203**, and having between them a two sided plane **205** that will temporarily connect to the lower strength fastener layer **204**, when in contact with it.

The preceding figures are only some illustrative examples. The layers described can have any form, as for instance, curvilinear, zig-zag, etc. and a combination of any forms. Can be related to any geometrical shape, as for instance, rectangle, triangle, polygon, circle, ellipse, etc, and any combination thereof. Likewise, the layers may be in the periphery of such geometrical shape, and/or the entire area of said geometrical shape.

It is further explicitly disclosed as an aspect of this specification that the pattern arrangements illustrated by these figures and corresponding text apply to all the embodiments of this invention.

**EMBODIMENT EXAMPLES:** It is to be understood that the described and illustrated embodiments merely represent some examples. After applying the principles described, and in combination with the multiple pattern arrangements of layers possible, illustrated with examples of preceding **FIGS. 2A-6B**, and any combination thereof, other embodiments and combination of embodiments will result obvious within the scope of this invention. Also, the position of the adhesive layers and adhesive inhibitor layers may be in inverse order in all embodiments. Attributes of adhesive and adhesive inhibitor (e.g. release) substances may vary to suit different fastening needs, as for instance: the need to temporarily connect a coating of adhesive to a coating of adhesive inhibitor.

Closely related embodiment figures have the same number but different alphabetic suffixes.

The terms used in the description of embodiments are intended to be exemplifying, and by no means to be restrictively construed, as obvious equivalents may be applied and substitutions may take place within the scope of the invention.

For instance: “score” or “score lines” are illustrative examples of any means of weakening a sheet material for subsequent folding; “die cut” is an illustrative example of cutting a sheet material into a shape or to remove a shape out of a sheet material; “perforation lines” is an illustrative example of any means of weakening a sheet material for subsequent detachment of a portion thereof. Score or folding lines may also be substituted by printed guides, or

may simply be omitted.

Also, a fastener is exemplified by an adhesive and a fastener inhibitor is exemplified by an adhesive inhibitor (e.g. a release substance)

"Sheet material" is any flexible flat material, and includes but is not limited to: paper, cardboard, film, acetate, and the like. A particular mention is made of a product known in the market as "Tyvek™" by Dupont Corp. of Wilmington, DE; and of another product being commercialized in conventional paper sizes by Xerox Corp. of Rochester, NY, under the commercial name "Never Tear Paper™" that may be used whenever suitable or desirable.

Indicia shown in all embodiments is only for purposes of illustration. It is to be understood that any type of indicia may be inscribed on the forms, within the scope of the invention.

Also, whether it is shown or not, all embodiments may incorporate **a)** detachment means (e.g. perforation lines) to enable the instant production of separate pieces; **b)** openings that enable the creation of windows, that may have or may not have a translucent cover; **c)** traction holes, to enable the feeding of the forms through traction printers; as well as any other features established in the industry.

**1st EMBODIMENT EXAMPLE: FIGS. 7A and 7B** progressively illustrate the application of this invention to produce a self sealing letter sheet suitable for feeding into laser printers and other non continuous printers. This and other examples are for illustration purposes, to show some preferred embodiments. Some shown elements, like score lines may be desirable in certain instances but are not an indispensable aspect of the invention, as indicated above.

**REFERRING TO FIG. 7A:** A previously die or otherwise cut sheet **207** has score lines **208**, **210** and **212** separating the body **214** from flaps **216**, **218** and **220**, respectively. Adhesive layers **202**, were applied to the flaps. An adhesive inhibitor layer **206** was applied to the body. Score lines **222** and **224** were applied to the body.

**REFERRING TO FIG. 7B:** Flaps are bent towards the body, connecting temporarily to it, defining the finished product, as it is offered for sale to the public. The finished self sealing letter sheet is now ready to be fed through a printer by the user.

FIGS. 7C through 7F further demonstrate the utilization of this product by the user.

FIG. 7C shows the self sealing letter sheet after it was printed. FIG. 7D shows the self sealing letter sheet after flaps were unfolded. FIG. 7E shows the self sealing letter sheet being folded, so the private message will be covered and the addressing information will be readily visible. FIG. 7F shows the self sealing letter sheet fully sealed and displaying the addressing information.

An alternate of this embodiment is illustrated with **FIG. 8**, where the letter sheet has pre-printed a blank check indicia, has perforation lines **226** and **228**, for the subsequent detachment of the check and other sections, after personalized imprinting takes place.

Another alternate letter sheet (not shown) of this 1st and any subsequent embodiment is obtained by omitting the adhesive inhibitor layer **206** and using a dry adhesive substance as the adhesive layers **202**, that is activated by its moistening. For the temporary connection of the flaps to the body, a low tack adhesive **204** is used, interacting with a facing space that has no layer of any substance.

**2nd EMBODIMENT EXAMPLE: FIGS. 9A and 9B** progressively illustrate the application of this invention to produce a self sealing letter sheet suitable for feeding into laser printers and other non continuous printers.

**REFERRING TO FIG. 9A:** A previously die or otherwise cut sheet **207** has score lines **208**, **210** and **212** separating the body **214** from flaps **216**, **218** and **220**, respectively. Adhesive layers **202**, were applied to the flaps. An adhesive inhibitor layer **206** was applied to the body. Score lines **222** and **224** were applied to the body.

**REFERRING TO FIG. 9B:** Flaps were bent towards the body, connecting temporarily to it, defining the finished product, as it is offered for sale. The finished self sealing letter sheet is now ready to be fed through a printer by the user.

FIGS. 9C through 9F further demonstrate the utilization of this product by the user.

FIG. 9C shows the self sealing letter sheet after it was printed. FIG. 9D shows the self sealing letter sheet after flaps were unfolded. FIG. 9E shows the self sealing letter sheet being folded, so the private message will be covered and the addressing information will be readily visible. FIG. 9F shows the self sealing letter sheet fully sealed and displaying the



addressing information.

**3rd EMBODIMENT EXAMPLE: FIGS. 10A and 10B** progressively illustrate the application of this invention to produce a self sealing letter sheet suitable for feeding into laser printers and other non continuous printers.

**REFERRING TO FIG. 10A:** A previously die or otherwise cut sheet **207** has score lines **208**, **210** and **212** separating the body **214** from flaps **216**, **218** and **220** respectively. Adhesive layers **202**, were applied to the flaps. An adhesive inhibitor layer **206** was applied to the body. Score line **222** was applied to the body. Windows **230** and **232** were obtained from original cut.

**REFERRING TO FIG. 10B:** Flaps were bent towards the body, connecting temporarily to it, defining the finished product. The self sealing letter sheet is now ready to be fed through a printer by the user.

FIGS. 10C through 10F further demonstrate the utilization of this product by the user.

FIG. 10C shows the self sealing letter sheet after it was printed. FIG. 10D shows the self sealing letter sheet after flaps were unfolded. FIG. 10E shows the self sealing letter sheet being folded, so the private message will be covered and the addressing information will be readily visible through the windows. FIG. 10F shows the self sealing letter sheet fully sealed and displaying the addressing information.

An alternate of this embodiment is illustrated with **FIG. 11**, where the letter sheet is used to produce a personalized official message.

Another alternate letter sheet (not shown) of this 3rd embodiment is obtained by omitting the adhesive inhibitor layer **206** and using a dry adhesive substance as the adhesive layers **202**, that is activated by its moistening. For the temporary connection of the flaps to the body, a low tack adhesive **204** is used, interacting with a facing space that has no layer of any substance.

**4th EMBODIMENT EXAMPLE: FIGS. 12A and 12B** progressively illustrate the application of this invention to produce a self sealing letter suitable for feeding into laser printers and other non continuous printers.

**REFERRING TO FIG. 12A:** A previously die or otherwise cut sheet **207** has score lines **208**, **210** and **212** separating the body **214** from flaps **216**, **218** and **220** respectively. Adhesive layers **202**, were applied to the flaps. An adhesive inhibitor layer **206** was applied to the body. Score line **222** was applied to the body.

**REFERRING TO FIG. 12B:** Flaps were bent towards the body, connecting temporarily to it, defining the finished product. The self sealing letter sheet is now ready to be fed through a printer by the user.

FIGS. 12C through 12F further demonstrate the utilization of this product by the user.

FIG. 12C shows the self sealing letter sheet after it was printed. FIG. 12D shows the self sealing letter sheet after flaps were unfolded. FIG. 12E shows the self sealing letter sheet being folded. FIG. 12F shows the self sealing letter sheet fully sealed and displaying the addressing information.

An alternate of this embodiment is illustrated with **FIG. 13**, where the letter sheet is used to produce a personalized tax form, having perforation lines **226**, **227** and **228** to produce detachable sections.

Another alternate letter sheet (not shown) of this 4th embodiment is obtained by omitting the adhesive inhibitor layer **206** and using a dry adhesive substance as the adhesive layers **202**, that is activated by its moistening. For the temporary connection of the flaps to the body, a low tack adhesive **204** is used, interacting with a facing space that has no layer of any substance.

**5th EMBODIMENT EXAMPLE: FIGS. 14A and 14B** progressively illustrate the application of this invention to produce a self sealing letter sheet suitable for feeding into laser printers and other non continuous printers.

**REFERRING TO FIG. 14A:** A previously die or otherwise cut sheet **207** has score lines **208** and **210** separating the body **214** from flaps **216**, and **218** respectively. Adhesive layers **202**, were applied to the flaps. Adhesive inhibitor layers **206** were applied to the body. Score lines **222**, **223** and **224** were applied to the body. Windows **230** and **232** were obtained from original cut.

**REFERRING TO FIG. 14B:** Flaps were bent towards the body, connecting temporarily to it,

defining the finished product, as it was sold. User already printed the letter.

FIGS. 14C through 14E demonstrate subsequent steps taken by the user. FIG. 14C shows the self sealing letter sheet being folded. FIG. 14D shows the self sealing letter sheet fully sealed and displaying the addressing information, in a front view. FIG. 14E shows the back view of the self sealing letter sheet fully sealed.

An alternate letter sheet (not shown) of this 5th embodiment is obtained by omitting the adhesive inhibitor layers **206** and using a dry adhesive substance as the adhesive layers **202**, that is activated by its moistening, prior to permanently sealing the letter sheet. For the temporary connection of the flaps to the body, a low tack adhesive **204** is used, interacting with a facing space that has no layer of any substance.

**6th EMBODIMENT EXAMPLE: FIG. 15A and FIG. 15B** illustrate a variation of the fifth embodiment example, to produce a continuous letter sheet, suitable for web presses and any other friction continuous printers.

**REFERRING TO FIG. 15A:** A web of a sheet material **209** having detachment lines **234** and **236**, defining the limits of an individual letter sheet **207** having all the parts of letter sheet of FIG. 13A.

**REFERRING TO FIG. 15B:** An assembly of letter sheets is shown.

A variation of this letter sheet is obtained by adding traction holes **211** to the web **209**, as shown in FIG. 16.

**7th EMBODIMENT EXAMPLE: FIGS. 17A and 17B** progressively illustrate the application of this invention to produce a self sealing letter sheet suitable for feeding into laser printers and other non continuous printers.

**REFERRING TO FIG. 17A:** A previously die or otherwise cut sheet **207** has score lines **208** and **210** separating the body **214** from flaps **216**, and **218** respectively. Adhesive layers **202**, were applied to the flaps. Adhesive inhibitor layers **206** were applied to the body. Score lines **222**, **223** and **224** were applied to the body. Windows **230** and **232** were obtained on second panel from original cut.

**REFERRING TO FIG. 17B:** Flaps were bent towards the body, connecting temporarily to it,

defining the finished product, as it was sold. User already printed the letter sheet.

FIGS. 17C through 17F demonstrate subsequent steps taken by the user.

FIG. 17C shows the self sealing letter sheet being folded. FIG. 17D shows a later stage of the folding of the letter sheet. FIG. 17E shows the back view of the self sealing letter sheet fully sealed. FIG. 17F shows the front of the letter sheet fully sealed, and having addressing information readily visible.

An alternate letter sheet (not shown) of this 7th embodiment is obtained by omitting the adhesive inhibitor layers **206** and using a dry adhesive substance as the adhesive layers **202**, that is activated by its moistening, prior to permanently sealing the letter sheet. For the temporary connection of the flaps to the body, a low tack adhesive **204** is used, interacting with a facing space that has no layer of any substance.

**8th EMBODIMENT EXAMPLE:** FIG. 18 is a web of a sheet material **209** having detachment lines **234** and **236**, defining the limits of an individual letter sheet **207** having all the parts of letter sheet of FIG. 16A. With traction holes **211**, the letter sheets are suitable for feeding into a traction printer. With, or without the traction holes, the letter sheet is suitable for feeding into a friction printer.

In certain instances, as in the following 9th, 10th, 11th and 12th embodiment examples, privacy is not a critical aspect in a mailing project. Yet, it is desirable that the pieces have a certain size and or shape, for better handling and to conform to postal guidelines or regulations.

Thus, these embodiment examples describe a letter sheet that while offering limited privacy, obviates the need of an envelope; and can be readily sealed after entering indicia, in accordance to postal and courier established practices. The letter sheet also makes unnecessary the use of removable release strips and the use of dry adhesive coatings that need to be moistened for sealing.

Further customized advantages may be obtained by the use of “windows”, perforations that enable the instant production of detachable pieces, etc.

**9th EMBODIMENT EXAMPLE:** FIGS. 19A and 19B progressively illustrate the application of this invention to produce a self sealing letter sheet suitable for feeding into

laser printers and other non continuous printers.

**REFERRING TO FIG. 19A:** A sheet 207 has score line 208 separating the body 214 from flap 216. An adhesive layer 202, was applied to the flap. An adhesive inhibitor layer 206 was applied to the body. Score line 222 was applied to the body.

**REFERRING TO FIG. 19B:** Flap was bent towards the body, connecting temporarily to it, defining the finished product, as it was sold. User already printed the letter.

FIGS. 19C through 19D demonstrate subsequent steps taken by the user.

FIG. 19C shows in rear view the self sealing letter sheet being folded. FIG. 19D shows in front view the self sealing letter sheet fully sealed.

An alternate letter sheet (not shown) of this 9th embodiment is obtained by omitting the adhesive inhibitor layers 206 and using a dry adhesive substance as the adhesive layers 202, that is activated by its moistening, prior to permanently sealing the letter sheet. For the temporary connection of the flaps to the body, a low tack adhesive 204 is used, interacting with a facing space that has no layer of any substance.

**10th EMBODIMENT EXAMPLE: FIGS. 20A and 20B** progressively illustrate the application of this invention to produce a self sealing letter sheet suitable for feeding into continuous printers.

**REFERRING TO FIG. 20A:** A web 209 has detachment lines 234 and 236, that define individual form 207. Score line 208 separates the body 214 from flap 216. An adhesive layer 202, was applied to the flap. An adhesive inhibitor layer 206 was applied to the body. Score/perforation line 222 was applied to the body. Perforated (detachment) lines 213 were applied.

**REFERRING TO FIG. 20B:** Flap was bent towards the body, connecting temporarily to it, defining the finished product, as it is sold. User already printed the letters.

FIGS. 20C through 20D demonstrate subsequent steps taken by the user.

FIG. 20C shows an individual letter sheet detached from the web. FIG. 20D shows the flap unfolded and letter sheet being sealed. FIG. 20E shows the letter sheet fully sealed.

An alternate letter sheet (not shown) of this 10th embodiment is obtained by omitting the

adhesive inhibitor layers **206** and using a dry adhesive substance as the adhesive layers **202**, that is activated by its moistening, prior to permanently sealing the letter sheet. For the temporary connection of the flaps to the body, a low tack adhesive **204** is used, interacting with a facing space that has no layer of any substance.

A variation of the 10th embodiment letter sheet with all its parts and ramifications, is illustrated by **FIG. 21** further incorporating holes **211** for use with a tractor printer.

**11th EMBODIMENT EXAMPLE: FIGS. 22A and 22B** progressively illustrate the application of this invention to produce a self sealing letter sheet suitable for feeding into laser printers and other non continuous printers.

**REFERRING TO FIG. 22A:** A sheet **207** has score line **208** separating the body **214** from flap **216**. An adhesive layer **202**, was applied to the flap. An adhesive inhibitor layer **206** was applied to the body. Score lines **222** and **224** were applied to the body.

**REFERRING TO FIG. 22B:** Flap was bent towards the body, connecting temporarily to it, defining the finished product, as it was sold. User already printed the letter.

**FIGS. 22C through 22D** demonstrate subsequent steps taken by the user.

**FIG. 22C** shows the self sealing letter sheet being folded. **FIG. 22D** shows the self sealing letter sheet fully sealed.

An alternate letter sheet (not shown) of this 11th embodiment is obtained by omitting the adhesive inhibitor layers **206** and using a dry adhesive substance as the adhesive layers **202**, that is activated by its moistening, prior to permanently sealing the letter sheet. For the temporary connection of the flaps to the body, a low tack adhesive **204** is used, interacting with a facing space that has no layer of any substance.

**12th EMBODIMENT EXAMPLE: FIGS. 23A and 23B** progressively illustrate the application of this invention to produce a self sealing letter sheet suitable for feeding into laser printers and other non continuous printers.

**REFERRING TO FIG. 23A:** A sheet **207** has score line **208** separating the body **214** from flap **216**. An adhesive layer **202**, was applied to the flap. An adhesive inhibitor layer **206** was applied to the body. Score lines **222** and **224** were applied to the body. Window **230**

was cut out.

**REFERRING TO FIG. 23B:** Flap was bent towards the body, connecting temporarily to it, defining the finished product, as it was sold. User already printed the letter.

FIGS. 23C through 23D demonstrate subsequent steps taken by the user.

FIG. 22C shows the self sealing letter sheet being folded. FIG. 23D shows the self sealing letter sheet fully sealed, and displaying the addressing information.

An alternate letter sheet (not shown) of this 12th embodiment is obtained by omitting the adhesive inhibitor layers **206** and using a dry adhesive substance as the adhesive layers **202**, that is activated by its moistening, prior to permanently sealing the letter sheet. For the temporary connection of the flaps to the body, a low tack adhesive **204** is used, interacting with a facing space that has no layer of any substance.

## **OTHER EMBODIMENTS**

There are mailing assignments that require a reply from the recipient of the piece. In these cases, it may be desirable to include means for instant reply, so this convenience maximizes the effectiveness of the assignment. A reply card, which may be detached from the original piece may suffice in certain cases. In others where privacy is desirable, this card is not viable.

A solution is provided by the following 13th and 14th embodiment examples, which disclose “two-way” self sealing letter sheets, built out of one blank of a flat, flexible material, and readily sealable, obviating thereby the use of two envelopes. In other words, a letter sheet is sent to the recipient, who opens it, detaches a portion of it, fills it out, seals it as another letter and sends it back to original remittent.

**13th EMBODIMENT EXAMPLE: FIGS. 24A and 24B** illustrate in a progressive manner the application of this invention to build a two-way self sealing letter sheet.

**REFERRING TO FIG. 24A:** A sheet material blank **207** has a first letter section **238** with main flaps **216**, **218** and **220**, and adhesive layers **202** and a release layer **206**. First letter section is to be separated from second letter section **244** by detachment line **234**. Second letter section **244** has flaps **246**, **248** and **250**; and adhesive layers **202** and release layers

**206.** Inner score lines **252** and **254** are applied. Outer score lines **256** and **258** are applied. Perforation lines **260** and **262** are applied across entire two-way letter sheet.

**REFERRING TO FIG. 24B:** All flaps were bent. (Flaps of second letter section **244** were bent about inner score lines.) Adhesive layers connected in a removable fashion to release layers. Two-way letter sheet is shown after it was printed by the user bearing a message on the first letter section and a reply form for that message on the second letter section. Addressing information appears on the back side of flap **216**.

FIGS. 24C through 24N demonstrate the utilization of this product by the user.

FIG. 24C shows the flaps of the first letter section unfolded. FIG. 24D shows the letter sheet being fanfolded for sealing. FIG. 24E shows the letter sealed, further displaying the addressing information. FIG. 24F shows the tearing along perforated lines of one side as the first step of opening the letter sheet. FIG. 24G shows the tearing along perforated lines of the other side as the second step of opening the letter sheet. FIG. 24H shows the letter opened and unfolded by recipient, and having its flaps removed. FIG. 24I shows the second (reply) letter section obtained by removing remnant of first letter section. FIG. 24J shows the second letter section fully detached. FIG. 24K shows the side flaps of the second letter section unbent and the second letter section filled out. FIG. 24L shows the second letter section being folded. FIG. 24M shows the flaps folded by outer score lines, and the second letter section sealed in front view, further displaying addressing indicia. FIG. 24N shows the sealed second letter section in rear view.

**14th EMBODIMENT EXAMPLE: FIG. 25A** and **FIG. 25B** illustrate in a progressive manner the application of this invention to build another two-way self sealing letter sheet.

**REFERRING TO FIG. 25A:** A die-cut sheet **207** has a message panel **264**, with flaps **216**, **218** and **220**, and adhesive layers **202** and release layer **206**; a reply mailer **244**, whose limits are defined by detachment lines **234** and **236**, and with flaps **246** and **248**; and adhesive layers **202** and release layers **206**; and an addressing panel **266**.

**REFERRING TO FIG. 25B:** All flaps are now bent. Letter sheet is shown as it is marketed.

FIGS. 25C through 25O demonstrate subsequent steps taken by the user.



FIG. 25C shows the letter sheet after it was printed by the user. FIG. 25D shows the flaps of the message panel unfolded. FIG. 25E shows the letter sheet being fan-folded for sealing. FIG. 25F shows a more advanced stage of the folding. FIG. 25G shows the letter sheet sealed and displaying addressing information. FIG. 25H shows the letter sheet after it was opened, unfolded and some flaps were removed by recipient. FIG. 25I shows the message panel being removed by recipient. FIG. 25J shows the addressing panel being removed. FIG. 25K shows the reply portion, ready to be used. FIG. 25L shows the reply portion after it was filled out, and having its flaps unfolded. FIG. 25M shows the reply panel being folded. FIG. 25N shows the reply panel sealed (rear view). FIG. 25O shows the reply portion sealed, and displaying pre-printed indicia (back view)